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09/848,651	05/03/2001	Jay M. Short	DIVER1280-12	7330

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EXAMINER

KATCHEVES, KONSTANTINA T

ART UNIT	PAPER NUMBER
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1636

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DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/848,651

Applicant(s)

SHORT ET AL.

Examiner

Konstantina Katcheves

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 7, 9, 13, 14, 16 and 17 is/are rejected.
- 7) ☒ Claim(s) 4, 6, 8 and 10-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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### **DETAILED ACTION**

Claims 1-14 and new claims 16 and 17 are pending in the present application. This Office action is in response to Paper No. 8, filed 24 March 2003.

#### ***Response to Amendment***

Applicant is correct in stating that the sequence for the EcoRI linker sequence need not comply with 37 CFR 1.821-1.825 because the sequence is less than 10 nucleotides in length. Thus, this objection to the sequence is withdrawn.

The rejection of claim 1 under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, is withdrawn in view of Applicant's amendment and arguments of record.

The rejections of claims 1-14 under 35 U.S.C. §112, second paragraph, are withdrawn in view of Applicant's amendment to the claims.

The rejection of claims 1, 7, 9 and 13 under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Mendelsohn et al (Current Opinion in Biotechnology (1994) 5:482-486) is withdrawn in view of Applicant's amendment.

The rejection of claims 1-3, 5, 7, 9, 13 and 14 under 35 U.S.C. §103(a) as being unpatentable over Anderson et al (USP 5,968,738) in view of Young et al (Biology of Reproduction (1998) 58:302-311) is withdrawn in view of Applicant's amendment.

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***New Grounds of Rejection Necessitated by Applicant's Amendments***

Applicant has amended the claims such that new grounds of rejection are appropriate. Applicant's arguments will be addressed below insofar as those arguments apply to the new rejections.

***Claim Rejections - 35 USC § 103***

Claims 1, 7, 9, 13, 14, 16 and 17 are rejected under 35 U.S.C. § 103(a) as obvious over Mendelsohn et al (Current Opinion in Biotechnology (1994) 5:482-486) in view of Kornacker (USP 6,051,381).

Mendelsohn et al teach using two-hybrid systems to identify compounds that modulate protein interactions. In a typical two-hybrid system, a first protein is linked to a DNA-binding domain and a second protein is linked to transcriptional activation domain wherein when the first and second proteins interact, transcriptional activation occurs of a reporter gene. Modulation of the protein interaction results in changes in transcriptional activation. Both fusions are encoded by expression constructs which are co-encapsulated in a cell. Use of a fluorescent reporter system, such as green fluorescent protein or lacZ in combination with a fluorescent substrate is taught. Quantitating the expression of the fluorescent reporter using automated equipment is taught. Use of two-hybrids in either yeast or mammalian cells is disclosed. See entire document, especially pp. 482-484 "Two-hybrid Systems" and p. 485, first column, 2<sup>nd</sup> paragraph). Mendelsohn et al., however, fail to teach the use of two-hybrid systems in prokaryotic cells.

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Kornacker teaches a two-hybrid method for detecting protein-protein interactions in prokaryotic hosts and screening for modulators of these interactions. See column 2 and column 4.

It would have been obvious to one of skill in the art at the time the invention was made to use the methods of Mendelsohn with prokaryotic cells as disclosed in Kornacker. Even if the use of FACS in the two-hybrid screening taught by Mendelsohn et al is not inherent in the teaching of using automated equipment, it would have been obvious to one of ordinary skill in the art at the time of filing. One of ordinary skill in the art would have been motivated to use FACS in the method taught by Mendelsohn et al because Mendelsohn et al teach using fluorescent molecules as the reporter system, teach the use of automated equipment in quantitating the fluorescent reporter molecules with the advantage of the ease of using automated equipment and FACS is an extremely well-known automated means of detecting a fluorescent reporter system. Also, one of ordinary skill in the art would have been motivated to use this method because prokaryotic systems tend to be permeable to small molecules such that identification of modulators of protein-protein interactions could be more easily identified. See Kornacker, column 1. One of ordinary skill in the art would have reasonably expected success in practicing such a combination. Therefore, absent evidence to the contrary the invention, as a whole, would have been obvious to one of ordinary skill in the art at the time the invention was made.

Claims 1-3, 5, 7, 9, 13, 14, 16 and 17 are rejected under 35 U.S.C. §103(a) as being unpatentable over Anderson et al (USP 5,968,738) in view of Young et al (Biology of Reproduction (1998) 58:302-311) in view of Kornacker (USP 6,051,381).

Anderson et al teaches two-hybrid assays in mammalian cells using FACS-analyzable reporter molecules. The reporter molecules are green fluorescent proteins modified so that they can be used in mammalian cells. See entire document, especially col. 7, lines 3-17m col. 8, lines 15-25 and claim 11.

Young et al is a review article about two-hybrid assays and their wide applicability. Young et al teaches that among the many uses for two-hybrid assays there is drug discovery, specifically identifying agents that affect protein-protein interactions. Such agents may be obtained for instance from compound banks or may be a third protein co-expressed with the two-hybrid fusion proteins. See entire document, p. 304, first column, third full paragraph, and p. 308-309 under "Drug Discovery" and "High-Throughput Screening".

At the time the invention was filed, it would have been obvious to one of ordinary skill in the art to use the two-hybrid assay taught by Anderson et al to screen for agents that modulate protein-protein interactions as taught by Young et al. One of ordinary skill in the art would have been motivated to do so in order to screen for potential therapeutics (which advantageously would target specific molecular interactions) from large compound banks in the rapid, automated way FACS analysis permits. Also, one of ordinary skill in the art would have been motivated to use this method because prokaryotic systems tend to be permeable to small molecules such that identification of modulators of protein-protein interactions could be more easily identified. See Kornacker, column 1. One of ordinary skill in the art would have reasonably expected success in practicing such a combination. Therefore, absent evidence to the contrary the invention, as a whole, would have been obvious to one of ordinary skill in the art at the time the invention was made.

***Allowable Subject Matter***

Claims 4, 6, 8 and 10-12 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Konstantina Katcheves whose telephone number is (703) 305-1999. The examiner can normally be reached on Monday through Friday 7:30 to 4:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Remy Yucel, Ph.D. can be reached on (703) 305-1998. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 305-3014 for regular communications and (703) 305-7939 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3388.

Konstantina Katcheves  
May 31, 2003

  
REMY YUCEL, PH.D  
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